MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

BDS3024 – BUSINESS INTELLIGENCE
(All sections / Groups)

7 MARCH 2020
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 4 pages only.

2. Attempt **ALL** questions. The distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

Business Intelligence (BI) is an umbrella term that combines architectures, tools, databases, analytical tools, and methodologies.

(a) Briefly explain the **THREE (3)** types of data analytics in BI.   (6 marks)

(b) Provide **TWO (2)** common questions in each type of data analytics.   (6 marks)

(c) What are **TWO (2)** enablers in each type of data analytics?   (6 marks)

(d) What is **ONE (1)** possible outcome in each type of data analytics?   (3 marks)

(Total: 21 marks)

QUESTION 2

(a) Explain the concept of multidimensionality. Support your answer with **ONE (1)** example.   (10 marks)

(b) What is OLTP and OLAP? Support your answer by comparing purpose, data source, reporting, resource requirements and execution speed of OLTP and OLAP.   (10 marks)

(Total: 20 marks)

QUESTION 3

(a) What is web mining?   (2 marks)

(b) Explain the **THREE (3)** types of web mining.   (9 marks)

(c) Explain the **THREE (3)** Vs of Big data.   (9 marks)

(Total: 20 marks)

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QUESTION 4

Quickbiz Messengers: The Value and Uses of Databases

As QuickBiz grew, so did its reliance on databases. By the time the company had grown to a size of 90 employees, Andrew was using databases to create weekly schedules for part-time and full-time employees, track customer orders, store and access employee and customer information, organize and report financial data, and provide crucial information for marketing strategies. As his database needs expanded, he transitioned from one database management system to another.

Moving Up: From Microsoft Access to Oracle

In the early days, Andrew had relied on Microsoft Access and Excel for his company's database needs. When he hired his first part-time messengers, he used an Excel spreadsheet to set up weekly schedules. He stored customer and order information in an Access database. As business grew, so did the size of the database. Kayla Brown, an IT consultant - who worked in an office on the second floor of his building, told him that he should consider using a more powerful database management system (DBMS). When Leslie Chen suggested that QuickBiz create an intranet so that messengers could upload delivery information through their wireless connections, the need to switch to a more powerful DBMS became urgent. Microsoft Access wouldn't be able to handle the number of concurrent users that QuickBiz anticipated. Andrew decided to hire Kayla to help the office shift to Oracle. An Oracle database would be able to accommodate both the increased size of the database and the need for concurrent access.

Tapping the Power of Databases

Then Andrew turned his thoughts to using his data to better his service - to maintain his existing customers and strengthen his relationships with them. He also wanted to find out who would be good potential customers. He hired Kayla to run SOL queries and create reports. Surely he could find valuable information by exploring customer information and buying patterns.

First Andrew wanted to find out who his preferred customers were - those who used his service most often and provided the most revenue. The consultant used data-mining software to delve into the data and identified a profile. To his surprise, Andrew found that the legal and medical-supply firms were most profitable. He'd always thought the art gallery owners were his best clients because of the special handling their objects required. But lawyers and pharmacists needed faster delivery and special services, such as delivery confirmation, which commanded premium rates and generated additional revenue at no further cost per delivery to QuickBiz. Andrew designated those customers as VIPs and tagged their database files. VIPs would receive priority delivery on the routes from now on.

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Also, Andrew was interested in the purchasing patterns of customers. He planned to target those opportunities with a promotion to gain new clients. Again, the consultant came back with interesting news: larger law firms with branches throughout the Puget Sound area used QuickBiz's service most often on weekdays between the hours of 10 a.m. and 1 p.m. So Andrew decided to locate other similar firms and develop a direct-mail promotion to them - discounted deliveries for setting up an account and scheduling 30 orders in a month's time. Andrew also added additional messengers during that time frame to be sure to handle deliveries smoothly.

(Source: Chapter 7 Databases and Data Warehouses, page 217. Management Information Systems, 7th Edition, Thomson.)

QuickBiz gathers and maintains many types of data in its database. It has tried to ensure its security and safe backup while still being accessible to customers and employees. Let's explore some of the issues it faces in managing its database.

(a) QuickBiz's database is vital to its operations. The case at the beginning didn't mention its supplier data. QuickBiz has suppliers for its fleet of cars and trucks and for its office supplies.

(i) What are the **FIVE (5)** sorts of data QuickBiz would likely keep about its suppliers?

(10 marks)

(ii) What are the **TWO (2)** possible controls and limits it should put on its supplier data?

(4 marks)

(iii) Make **ONE (1)** recommendation to Andrew Langston on who should be able to review and change that data and where the data should be maintained.   (3 marks)

(b) Andrew had run into IT consultant Kayla Brown many times and began talking to her about his IT concerns. When he realized that he would need a database management system, he decided to take her advice and purchase Oracle.

(i) What sort of research should Andrew have done to make sure that Oracle was the best solution? (6 marks)

(ii) What **ONE (1)** advantage and **ONE (1)** disadvantage should he have considered when purchasing a new DBMS? (4 marks)

(c) QuickBiz has used SQL queries and reports to identify VIP customers and discover its most profitable clients and services. QuickBiz also has a Web site.

(i) How could it use Web site tracking data to enhance its services? (4 marks)

(ii) What **ONE (1)** department would be interested in this information? (4 marks)

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(iii) Andrew has heard that databases can also store digital images. Provide any **TWO** **(2)** parts of QuickBiz's data operations that might use digital images?   (4 marks)

(Total: 39 marks)

End of Paper